

AMENDMENTS TO THE CLAIMS

LISTING OF CLAIMS:

No Admission. The claims presented below are labeled pursuant to the request of the Patent and Trademark Office for convenience in examination. For example, reference to a claim as “currently amended” is not an admission that the claim was altered for any reason related to patentability. All claims identified as “Cancelled” have been cancelled without prejudice.

1-15. **(Cancelled).**

16. **(Currently Amended)** A method of site-specific downregulation of connexin protein expression for a therapeutic or a cosmetic purpose which comprises administering at least one anti-sense polynucleotide to a connexin 43 protein to a site on or within a patient at which said downregulation is required.

17. **(Currently Amended)** A method of reducing neuronal cell death which would otherwise result from a neuronal insult to a specific site in the brain, spinal cord, or optic nerve of a patient which comprises the step of administering at least one anti-sense polynucleotide to a connexin 43 protein to said site to downregulate expression of a connexin protein at and immediately adjacent said site.

18. **(Previously Presented)** A method according to claim 17 in which said anti-sense polynucleotide is administered to reduce neuronal loss due to physical trauma to the brain, spinal cord or optic nerve.

19. **(Previously Presented)** A method according to claim 17 in which said anti-sense polynucleotide is administered in a sufficient amount to downregulate expression of said connexin protein for at least 24 hours post-administration.

20. **(Currently Amended)** a method of promoting wound healing in a patient which comprises the step of administering at least one anti-sense polynucleotide to a connexin protein to said wound to downregulate expression of a connexin 43 protein at and immediately adjacent the site of said wound.

21. **(Original)** A method according to claim 20 in which the wound is the result of trauma.

22. **(Original)** A method according to claim 21 in which trauma is a burn.

23. **(Original)** A method according to claim 20 in which the wound is the result of a surgery.

24. **(Currently Amended)** A method of reducing inflammation as part of treating a wound or a tissue subjected to a physical trauma which comprises the step of administering at least one anti-sense polynucleotide to a connexin 43 protein to, or proximate to, said wound or tissue.

25. **(Previously Presented)** A method according to claim 24 in which said anti-sense polynucleotide is administered to reduce inflammation due to physical trauma to the brain, spinal cord or optic nerve.

26. **(Currently Amended)** A method of decreasing scar formation in patient who has suffered a wound which comprises the step of administering at least on anti-sense polynucleotide to a connexin 43 protein to said wound to downregulate expression of a connexin protein at and immediately adjacent the site of said wound.

27. **(Withdrawn)** A method of skin rejuvenation or thickening for a cosmetic or therapeutic purpose which comprises the step of administering, once or repeatedly, at least one anti-sense polynucleotide to a connexin protein to a skin surface.

28. **(Withdrawn)** A method according to claim 27 wherein said anti-sense polynucleotide is directed to connexin 43 and is administered to regulate epithelial basal cell division and growth.

29. **(Withdrawn)** A method according to claim 27 wherein said anti-sense polynucleotide is directed to connexin 31.1 and is administered to regulate outer layer keratinisation.

30. **(Withdrawn)** A method according to claim 27 wherein said anti-sense polynucleotide is in a cream.

31-42. **(Cancelled)**

43. **(Previously Presented)** A method according to claim 16, wherein said anti-sense polynucleotide is an oligodeoxynucleotide.

44. **(Currently Amended)** A method according to claim 16, wherein said connexin protein selected from the group consisting of a human connexin 43, ~~connexin 26, connexin 31.1, connexin 32 and connexin 36.~~

45. **(Previously Presented)** A method according to claim 16, wherein said anti-sense polynucleotide is present in a formulation together with a pharmaceutically acceptable carrier or vehicle.

46. **(Currently Amended)** A ~~method~~ method according to claim 45, wherein said formulation is suitable for topical administration.

47. **(Previously Presented)** A method according to claim 45, wherein said formulation contains polynucleotides to one connexin protein only.

48. **(Previously Presented)** A method according to claim 45, wherein said formulation contains polynucleotides to more than one connexin protein.

49. **(Currently Amended)** A method according to claim 48, in which one of the connexin proteins to which polynucleotides are directed is human connexin 43.

50. **(Previously Presented)** A method according to claim 48, which includes polynucleotides directed to at least two of connexin 26, connexin 31.1, connexin 32, connexin 36 and connexin 43.

51. **(Previously Presented)** A method according to claim 45, wherein the pharmaceutically acceptable carrier or vehicle is, or includes, a gel.

52. **(Previously Presented)** A method according to claim 51 in which the gel is a nonionic polyoxyethylene-polyoxypropylene copolymer gel.

53. **(Previously Presented)** A method according to claim 45, wherein the formulation further includes a surfactant or urea to assist with polynucleotide penetration into a cell

Please add the following new claims.

54. **(New)** A method of decreasing cell death in a tissue of a mammal comprising contacting the cells with an effective amount of a connexin 43 antisense polynucleotide.

55. **(New)** The method of claim 54, wherein said connexin 43 antisense polynucleotide is an oligodeoxynucleotide.

56. **(New)** The method of claim 54, wherein said oligodeoxynucleotide is an unmodified phosphodiester oligomer.

57. **(New)** The method of claim 54, wherein said connexin 43 antisense polynucleotide binds to at least a portion of a connexin 43 mRNA.

58. **(New)** The method of claim 54, wherein said connexin 43 antisense polynucleotide is exactly complementary to at least a portion of said connexin 43 mRNA.

59. (New) The method of claim 54, wherein said connexin 43 antisense polynucleotide is not exactly complementary to at least a portion of a connexin 43 mRNA.

60. (New) The method of claim 54, wherein said connexin 43 antisense polynucleotide is about 12 to about 40 nucleotides in length.

61. (New) The method of claim 54, wherein said connexin 43 antisense polynucleotide is about 30 nucleotides in length.

62. (New) The method of claim 54, wherein said connexin 43 antisense polynucleotide comprises SEQ ID NO: 1.

63. (New) The method of claim 54, wherein said connexin 43 antisense polynucleotide comprises SEQ ID NO: 2.

64. (New) The method of claim 54, wherein said connexin 43 antisense polynucleotide comprises SEQ ID NO: 3.

65. (New) The method of claim 54, wherein said connexin 43 is a human connexin 43.

66. (New) The method of claim 54, wherein said mammal is a human.

67. (New) The method of claim 54, wherein said tissue is skin.

68. (New) The method of claim 54, wherein said tissue is neural tissue.

69. (New) The method of claim 54, wherein said tissue is brain.

70. (New) The method of claim 54, wherein said is spinal cord.

71. The method of claim 54, wherein said tissue is connective tissue.

72. (New) The method of any claims 54-70 or 71, wherein said connexin 43 antisense polynucleotide is administered to a wound.

73 (New) The method of claim 72, wherein said wound is a surgical wound.

74. (New) The method of claim 72, wherein said wound is a burn.

75. (New) The method of any of claims 54-70 or 71, wherein said connexin 43 antisense polynucleotide is administered to a site of inflammation.

76. (New) The method of any of claims 54-70 or 71, wherein said connexin 43 antisense polynucleotide is disposed in a topical formulation.

77. (New) The method of claim 76, wherein said topical formulation comprises a gel.

78. (New) The method of claim 77, wherein said gel is a pluronic gel.

79. (New) The method of any of claims 54-70 or 71, wherein said connexin 43 antisense polynucleotide is administered by syringe.